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ABSTRACT

The Leadership-Culture Dimensional Screening Scale (LCDSS) measures the relationship between frontier and settlement school cultures; transactional and transformational leadership styles; and the four work roles (supervisor, administrator, manager, and leader) formed by the intersection of the model's culture and leadership dimensions. This instrument was administered to 2 separate 700-subject samples of Illinois principals in prekindergarten through grade 8 schools. The instrument development process used Cronbach's alpha as one homogeneity reliability indicator along with exploratory factor analysis as a data-reduction technique. The final tool contains 60 items on 7 subscales, with alphas ranging from .76 to .84. Alpha for the overall tool is .90. LCDSS can be further refined to improve all alphas, particularly in the case of the transactional, supervisor, and manager scales. Although still in its formative stages, LCDSS may be used to measure transactional and transformational leadership as exhibited by school principals. Definition and application of the cultural dimension warrant further study. Several tables are appended. (Author)

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The Leadership-Culture Dimensional Screening Scale: Measuring Transactional and Transformational Leadership within School Cultural Contexts

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Running head: THE LCDSS

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Abstract

The Leadership-Culture Dimensional Screening Scale (LCDSS) measures the relationship between frontier and settlement school cultures; transactional and transformational leadership styles; and the four work roles (supervisor, administrator, manager, leader) formed by the intersection of the culture and leadership dimensions of the model. The tool was administered to two separate 700-subject samples of principals in pre-K through 8 Illinois schools. The instrument development process used Cronbach's alpha as one homogeneity reliability indicator along with exploratory factor analysis as a data reduction technique. The final tool contains 60 items on seven subscales with alphas ranging from .76 to .84. Alpha for the overall tool is .90. Although still in its formative stages, the LCDSS may be used to measure transactional and transformational leadership as exhibited by school principals. Definition and application of the cultural dimension warrant further study.

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The Leadership-Culture Dimensional Screening Scale: Measuring Transactional and Transformational Leadership within School Cultural Contexts

The Leadership-Culture Dimensional Screening Scale was developed by this researcher to examine the relationship between transactional and transformational leadership styles within the context of school culture (Reed, 1995). J. M. Burns first proposed a theory of transactional versus transformational leadership in 1978. According to Burns leadership results when persons with certain motives mobilize resources in a way that arouses and satisfies the motives of followers. Transactional leadership exercises control over basic extrinsic needs, while transformational leadership focuses on high-order psychological needs and later on moral questions involving goodness, duty, and obligation (Burns, 1978).

These notions of leadership were later applied to school settings by Douglas Mitchell and Sharon Tucker (1992), who contend that the leadership style and emphasis of school executives are influenced not only by personal characteristics and motives but also by the organizational environments and the

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kinds of communities in which school executives work. Mitchell and Tucker have superimposed a cultural dimension onto the Burns leadership dichotomy. Some schools exist in community cultures where there is broad-ranged support based on consensus about the purposes and processes of education. A number of other schools, typically those enrolling large percentages of children who are "at risk" of failure due to economic and social reasons, are often labeled failures and are challenged to change their goals while at the same time improving performance.

Mitchell and Tucker indicate that the difference between these two cultural settings is similar to the difference between frontier life and settled communities. In frontier cultures, groups must band together for mutual support and protection. Thus, frontier leadership emphasizes culture building and problem solving. The leader must establish a basis for examining common experiences and for building shared commitments to a community that is still taking shape.

Settled cultures, on the other hand, are characterized by well-established norms and a body of shared beliefs. These communities have stable schools and programs with well-specified tasks and relationships. The leader in a settlement culture serves more as a coordinator and regulator of core tasks.

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In the Mitchell and Tucker model, the leadership dimension and the cultural dimension intersect to form four work-role quadrants (supervisor, administrator, manager, and leader). Mitchell and Tucker have conceptualized these quadrants as described in the paragraphs that follow.

Supervisor. Supervisors see the school as a stable, broadly supported social institution. They think about interpersonal influence on the basis of transactions and extrinsic incentives. Supervisors generally believe that the goals of education are obvious to everyone and that teachers can be effective if they implement good standard classroom practices. Student achievement is equated with mastering materials.

Administrators. Administrators believe that school effectiveness is highly associated with the attitudes of teachers and students, rather than with the implementation of specific programs or through the distribution of material or psychological incentives. Administrators emphasize the importance of interpersonal dynamics and good communication as substitutes for material incentives. They believe it is important to "minister" to the needs of what they consider to be a highly trained, professional staff. Administrators pay particular

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attention to their role in supporting and coordinating staff activities.

Managers. Managers tend to sense that broad social support for education is no longer available. Change, then, becomes more important than implementation of established programs. Managers perceive task definition to be more important than nurturing interpersonal relationships. The manager views teaching as a skilled craft that is improved by careful research-based program design and application of instructional techniques. Further, managers are likely to emphasize the importance of performance indicators as explicit measures of school productivity.

Leaders. Leaders are needed in settings where social and cultural support for the school is weak and where adequate incentive systems are not available. Leaders recognize that support for their organizations depends upon making qualitative changes in performance. Best described by the adjective "transformational," these leaders see themselves as responsible for facilitating fundamental change in student and teacher attitudes and beliefs. Leaders view success as a by-product of everyone's working together, developing and then pursuing common goals. School improvement is a matter of revamping

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educational goals and realigning school programs with needs and interests of communities, families, students, and school staff.

The culture--work-role nexus. While the school executive may employ all four work-role orientations to accomplish specific tasks, the executive's dominant work-role orientation must match that of the culture. Thus, leadership roles in schools for the at-risk learner may be fundamentally different from those roles in schools serving the needs of wealthy, suburban children. The present study is extracted from dissertation research aimed at measuring the leadership constructs as they have been operationalized by Mitchell and Tucker. This paper traces the development of the LCDSS from content validity to psychometric analysis of sample data.

Method

Tool I

Subjects: Tool I Development

The sampling frame consisted of all pre-K through 8 schools (n = 3,197) listed in the 1993-94 Illinois public school directory (ISBE, 1994). A probability sample without replacement (n = 700), produced by the random number generator

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of Lotus 1-2-3, was drawn from this frame. The principal of each randomly selected school was asked to complete the survey.

A first step in this study was to determine how many subjects were needed for adequate power. According to DeVellis (1991), 5 to 10 subjects per item, up to about 300 subjects, represents an adequate number for item analysis. He further notes that when the sample is as large as 300, the ratio can be relaxed. Given DeVellis's guidelines, an adequate sample size for a 57-item tool would entail from 285 to 570 subjects. Seven hundred (700) questionnaires were mailed to randomly selected subjects to ensure adequate returns. Subjects were given three weeks to respond.

Three-hundred thirty-four (334) surveys were returned, representing a 47.7% total response rate. Five respondents were eliminated from the study because they were not principals; 13 others were excluded because they did not respond to the survey for a variety of reasons. (Among the reasons cited were that they did not want to answer a numbered survey; they were too new in the position; or they did not have enough time in their schedule.) This left 316 subjects for the analysis (45% return on 700, or 5.5 subjects per item).

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Design and Procedure: Tool I Development

Content validity of the LCDSS. The LCDSS is specifically designed to tap the kinds of behavior exhibited by school executives in educational settings. Instrument development began with a comprehensive review of the literature to extract ideas regarding what constitutes effective leadership and supportive school cultures. Validating the content of LCDSS indicators involved several steps, one of which was administration of a 17-question one-page survey to 50 randomly selected Illinois principals to determine their opinion about the extent to which each indicator could be used to reveal information about leadership style or school culture. Thirty-three (33) principals responded (66% return rate).

The 11 leadership style indicators listed on the survey were: the principal's views of teachers; the principal's opinion about the curriculum; the principal's views on learning; how the principal views instruction; what the principal determines to be staff development priorities; methods used by the principal to motivate teachers; the focus and goals of the school; the principal's perceptions of the community environment; the principal's interpersonal style; the principal's perceptions of what constitutes effective schools; and the metaphors used by the

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principal to describe the school's vision and goals.

The 6 school culture stability indicators listed on the survey were: (a) the community's views of curriculum and instruction; (b) the community's views of the purposes of schooling; (c) the environment in which the school operates; (d) the level of community support for education in general; (e) the level of community support for the principal; and (f) the level of community support for the school in particular.

Principals were asked to rate (on a scale of 1 to 3) the relevancy of each category in revealing information about school leadership or school culture stability. Anchors for the ratings were "not very revealing," "moderately revealing," and "highly revealing."

An initial listing of over 200 items was constructed to correspond to the 17 indicators noted above. Indicators with mean ratings falling below 2.4 (the overall mean for the 17 items) were eliminated from further consideration. Indicators eliminated at this stage were: (a) metaphors used in the school setting (2.1); (b) principal's staff development priorities (2.4); (c) principal's perceptions of the community environment (2.2); (d) community's views of the curriculum and

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instruction (2.1); (e) the community's view of the purposes of schooling (2.2); (f) and the level of community support for the principal (2.3).

After these adjustments, the initial draft instrument contained 70 items and represented the following dimensions of leadership and school culture: (a) the principal's views about teachers; (b) the principal's opinion about the curriculum; (c) the principal's view on learning; (d) the principal's views on instruction; (e) methods used by the principal to motivate teachers; (f) the focus and goals of the school; (g) the principal's interpersonal style; (h) the principal's perceptions about what constitutes effective schools; (i) the environment in which the school operates; (j) the level of community support for education in general; and (k) the level of community support for the school in particular.

Each of the 70 items was further reviewed to assess its correspondence to the theory. An additional 13 items were eliminated at this stage, and revisions were made in other items to simplify wording, eliminate double barreling, and improve semantics. The revised tool, comprised of 57 items, will be referred to as Tool I throughout the rest of this discussion. Tool I was passed to the next instrument development phase which entailed psychometric analysis.

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Organization of items. Tool I was divided into four parts. Part I consisted of 8 questions on the community's views of the school in general. Part II consisted of 17 questions about leadership style (9 transactional and 8 transformational). Part III contained 32 questions regarding the principal's orientation and attitudes about teaching and learning; this part was designed to assess the principal's predominant work-role orientation. Part IV gathered information about 10 demographic indicators.

Psychometric analysis synopsis: Tool I. An exploratory factor analysis using principal axis factoring with a Varimax rotation along with a homogeneity reliability analysis were run using Tool I sample data from 316 principals. These initial results were used to further refine Tool I. In addition to the obvious wording changes, the psychometric properties of each item were examined carefully. This involved a study of the relationships among the means, standard deviations, inter-item correlations, and alphas. Further, results from the exploratory factor analysis, which was used in instrument development and data reduction, were scrutinized to detect problems in items not loading where

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expected. Questions were added in some cases, completely rewritten in other cases, and moved to different subscales in still other situations.

In summary, 10 items were added to Tool I to improve inter-item correlations on each subscale. Wording changes were made to eliminate double barreling, clarify meaning, improve conformity to theory, improve alphas, and increase correlations among items on each subscale. The revised tool contained 67 items and will be referred to as Tool II in the rest of the report. These changes are presented in Table 1.

Insert Table 1 about here

Tool II

Subjects: Tool II Development

A new probability sample of 700 pre-K to 8 Illinois public schools was used to test Tool II. The sampling frame was the same as that used for Tool I. Again, the principal of each school was asked to complete the survey.

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An a priori power analysis revealed that 335 subjects would be an adequate number of respondents to perform the homogeneity analysis for the 67-item tool. Three hundred sixteen (316) principals returned the surveys (45% response rate). Five (5) surveys were excluded because of missing or incomplete data. Six (6) surveys were excluded because the respondents were not principals. An additional 2 surveys were excluded by the statistical program, leaving a total of 303 for the analysis -- 32 short of the desired 335. This represents 4.5 subjects per item. The ideal number is 5 respondents per item.

Characteristics of 303 active cases in the second sample are presented in the following discussion. One-hundred ninety (190) of the respondents were male, making up 62.7 percent of the sample, and 112 respondents were female (37 percent). Approximately 89 percent of the respondents were Caucasian-Americans, 7.3 percent African-Americans, and 3 percent Hispanic-Americans. Approximately 38.9 percent of the communities represented in the study were rural, 16.2 percent were urban, 42.9 percent were suburban, and 2 percent were designated as "other".

Racial composition was computed. Approximately 78.46 percent of the

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schools had enrollments that were predominantly Caucasian. Schools with predominantly African-American enrollments represented 12.49 percent of the sample. Predominantly Hispanic-American schools comprised 6.54 percent, and schools with predominantly Native-American enrollments made up 0.21 percent of the schools in the sample. Schools with predominant enrollments designated as "other" made up 0.24 percent of the sample.

Information was also collected regarding the type of school included in the study. Primary schools housing continuous grades K to 5 comprised 15.5 percent of the sample. Junior high schools with only grades 6 to 8 made up 16.8 percent. Approximately 19.5 percent of the schools had continuous grades K to 8, while those with other organizational grade combinations made up 48.2 percent of the sample.

The mean enrollment of schools in the sample was approximately 459, the lowest enrollment being 43 and the highest being 2150. Only those surveys answered by principals were included in the study. Their average tenure was 6.91 years, with a range of 30 years.

Design and Procedure: Tool II Development

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The LCDSS theoretical model hypothesizes a cultural factor, a leadership style factor with two components, and a work-role factor with four components. These seven factors are assumed to be orthogonal.

Exploratory factor analysis. An exploratory factor analysis using principal axis factoring with a Varimax rotation was performed on Tool II as a data reduction and instrument development procedure. In this study a .30 cutoff was used to indicate significance of a factor loading.

Insert Table 2 about here

Summaries of factor loadings are presented in Table 2 and Table 3. For Tool II, Culture and Style variables were run as one group, and the Work-role variables were run as a different group. PAF with a Varimax rotation extracted three Culture and Style factors. The first had an eigenvalue of 4.88 and accounted for 18.1% of the variability to be explained. The second factor, with its eigenvalue of 2.53 accounted for another 9.4% of the variability. Another 5.2% of the variability was explained by the third factor, which had an eigenvalue of 1.40.

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These three factors accounted for 32.7% of the variability to be explained by the 10 culture and 17 style variables.

Insert Table 3 about here

For the Work-role variables, four factors were extracted, accounting for 28.9% of the variability to be explained. Factor 1 accounted for 12.5% of the variability and had an eigenvalue of 4.97. The second factor, with an eigenvalue of 3.94 explained another 9.9% of the variability. Factor 3 had an eigenvalue of 1.65 and accounted for 4.1% of the variability. The fourth factor, with its eigenvalue of 0.97 explained another 2.4% of the variability among the 40 variables.

Homogeneity reliability. The homogeneity reliability analysis for Tool II is based on an active sample of three-hundred three (303) principals. Homogeneity reliability was examined in terms of overall alpha, item means, inter-item correlations, mean inter-item correlations, corrected item-subscale correlations, and alphas if the item was deleted.

Results

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Tool II culture subscale statistics. On Tool II the Culture subscale consisted of 10 items pertaining to the community's views of the school. The items are worded negatively to eliminate social desirability bias. Rating scales ranged from 0 to 5 and were reverse scored so that high scores reflect stable cultures and low scores reflected unstable cultures. The Culture subscale mean for Tool II was 45.40 (out of 60). The item mean was 4.54, and the inter-item correlation was .29. Alpha for the Culture subscale on Tool II was .76 (up from .53 for Tool I).

Two of the items on the Tool II Culture subscale had relatively low means and high standard deviations (CU04 and CU09). Item-subscale statistics indicated an increase in alpha if CU04 were deleted. CU04 reads, "The community believes that the average income of families served by my school has decreased over the past 5 years." After this deletion, the procedure was executed again. Item-subscale statistics for the second run showed that alpha would further increase if CU09 were deleted. CU09 reads, "The community believes that our population is more transient than it was 5 years ago."

In the exploratory factor analysis, CU04 and CU09 had the lowest loadings on the Tool II Culture factor. In addition, the reliability analysis indicated that this

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scale would be improved by the elimination of these two items. With the deletion of these items, alpha increased to .81. The new subscale mean was 38.75 (out of 48); the new item mean was 4.84 (out of 6); and the new inter-item correlation was .35. Means and standard deviations, as discussed above, are presented in Table 4 for the reworked culture subscale.

Insert Table 4 about here

Tool II transactional subscale statistics. The Tool II Transactional Style subscale consisted of 9 items. The subscale mean was 23.47 (out of 45). The item mean was 2.61 out of a possible 5. The mean inter-item correlation was .27. Alpha for the subscale was .76 (up from .74 for Tool I). The exploratory factor analysis showed that TA09 loaded 0.31 on Factor 3, and TA14 loaded 0.26. In spite of these low loadings, both items were retained because of their contribution to the overall strength of alpha for the Transactional subscale.

Means and standard deviations for the Transactional subscale are presented in the Table 5. With the exception of TA09, all means fall near the midpoint of the

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scale. Standard deviations show expected levels of variability.

Insert Table 5 about here

Tool II transformational subscale. The Tool II Transformational Style subscale consisted of 8 items. The subscale mean was 29.47 (out of 40). The item mean was 3.68 (out of 5). The mean inter-item correlation was .41. Alpha for the subscale was .84 (compared to .87 for Tool I). Items on this subscale were not changed since no improvement in alpha would have resulted. In the exploratory factor analysis, all Transformational items loaded on a single factor.

Statistics for the Transformational style subscale are presented in the Table 6. Six of the means and standard deviations on the revised subscale reflected expected patterns of central tendency and variability. TF12 and TF22 had standard deviations that were moderately high but not problematic.

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Insert Table 6 about here

Tool II combined leadership style subscales. Tool II combined Leadership Style subscales had a subscale mean of 52.93 (out of 85), an item mean of 3.11 (out of 5), and a mean inter-item correlation of .25. Alpha for the combined scales was .84.

Tool II administrator subscale statistics. The Tool II Administrator subscale consisted of 10 items. The scale mean was 39.22 (out of 50). The item mean for the subscale was 3.92 (out of 5). The mean inter-item correlation for the subscale was .18. Alpha was .64 (up from .53 on Tool I).

Item-total statistics showed that alpha would increase to .67 with the deletion of AD61. This was a test item which attempted to emphasize the "lawyer-like" qualities of teaching: "Principals have the greatest impact on school improvement when they encourage teachers to establish personal relationships with students as clients." Reliability procedures were rerun after the elimination of AD61 and indicated that alpha would increase even further (from .67 to .69) if

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AD62 were eliminated. AD62 was a test item that attempted to emphasize the "doctor-like" qualities of teachers: "Principals have the greatest impact on school improvement when they view teachers as specialists who treat the educational ills of students." Subsequent analysis revealed that alpha would improve even more with the elimination of AD58, another test item: "Principals have the greatest impact on school improvement when they minister to the needs of professional staff."

AD61 loaded 0.32 on the Manager factor in the exploratory factor analysis; AD26 loaded 0.37 on the Administrator factor. Both items were dropped to increase alpha for the Administrator subscale. The factor analysis showed that AD62 loaded on the Supervisor-Manager factor (a transactional dimension), AD58 loaded 0.38 on the Leader-Manager factor, and LD52 loaded 0.52 on the Administrator factor. The reliability analysis showed that alphas would improve with the elimination of these items. Consequently, AD58 was moved to the Leader factor; LD52 was moved to the Administrator factor, and AD62 was moved to the Supervisor factor. Alphas for all three scales improved as the result of this movement.

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Following these revisions, the Tool II Administrator subscale mean was 20.41 (out of 25). The subscale item mean was 4.08 (out of 5). The mean inter-item correlation was .47. Alpha for the revised subscale was .81 (up from .53 for Tool I and .64 for Tool II).

Statistics for the revised Administrator subscale are included in Table 7. Three of the means are somewhat high with relatively low standard deviations. Respondents tended to agree with these items with some consistency. The other two means and standard deviations fall within expected ranges.

Insert Table 7 about here

Tool II supervisor subscale statistics. The Tool II Supervisor subscale consisted of 10 items. The subscale mean was 24.02 (out of 40). The item mean is 2.40 (out of 5), and the mean inter-item correlation was .23. Alpha for the Tool II Supervisor subscale was .75 (up from .73 for Tool I). Item-total statistics indicated that no further improvement in the subscale alpha would result from elimination of items. One Administrator item (AD62) that loaded on the

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Supervisor factor in the exploratory factor analysis was moved to this subscale. As a result of the addition of this item, the subscale mean increased to 27.69; the item mean increased to 2.52; and alpha increased to .76. The inter-item correlations remained the same.

Supervisor subscale statistics are presented in Table 8. With the exception of SU29 and SU33, all means and standard deviations exhibit expected patterns.

Insert Table 8 about here

Tool II leader subscale statistics. The Tool II Leader subscale consisted of 10 items. The subscale mean was 42.67 (out of 50). The overall item mean was 4.27 (out of 5). The mean inter-item correlation was .23. Alpha for the Leader subscale was .72 (compared to .73 for Tool I).

Inter-item statistics indicated that alpha would increase to .77 with the elimination of LD56, which had a low mean and a high standard deviation. LD56 stated that "Teachers are most effective when they are encouraged to employ creative instructional styles similar to those used by performing artists."

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The exploratory factor analysis showed that LD56 loaded 0.29 on the Supervisor-Manager factor (a transactional dimension); this item was dropped because of the improvement to alpha that would result for the Leader subscale. With the elimination of LD56 and the addition of AD58 as described earlier, the subscale mean decreased to 39.7. The overall item mean increased to 4.4, and the mean inter-item correlation increased to .32 Alpha for the revised Leader subscale is .81 (up from .73 on Tool I and .72 on Tool II).

Statistics for the revised subscale are presented in Table 9. Means on the Leader subscale were high (4s out of a possible 5), and standard deviations were low. This shows that all respondents, despite their responses on the other subscales, tended to strongly agree with the Leader behaviors described by these items.

Insert Table 9 about here

Tool II manager subscale statistics. No items were removed from the Manager subscale. It consisted of 10 items. The subscale mean was 35.22 (out of

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50), the item mean was 3.52 (out of 5), and the mean inter-item correlation was .26. Subscale alpha was .78 (up from .74 for the 8-item Manager subscale for Tool I).

As shown in Table 10, means and standard deviations fell within expected ranges, with the exception of MG46 and MG65. These items had moderately high means and relatively low standard deviations.

Insert Table 10 about here

Summary of Tool II changes. Changes made to Tool II are summarized in Table 11. As the instrument moved from 57 items to 67 items and finally to 60 items, the inter-item means increased in most cases, and the alphas grew stronger. On Tool III (60 items), the lowest alphas are .76, and the highest is .84.

As seen in Table 11, changes made to Tool II were designed to improve alpha for the subscales affected. These changes were successful in most cases. No wording changes were made in the revision of Tool II to Tool III; however, some items were moved from one subscale to another. Seven items were eliminated. Two

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items were deleted from the Tool II Culture subscale in order to improve alpha. The Transactional and Transformational subscales remained virtually unchanged. The number of items on the Administrator subscale decreased from 10 to 5. Four of these items were original Tool II Administrator items; one was a Leader item that was moved to this scale.

Insert Table 11 about here

Alpha for the Administrator subscale increased from .64 on Tool II to .81 on Tool III. The Supervisor subscale went from 11 items on Tool II to 10 items on Tool III, and alpha increased from .73 to .76. The Manager subscale remained about the same, with alpha increasing from .69 to .77. The Leader subscale had a decrease in items from 10 on Tool II to 9 on Tool III. Alpha for the Leader subscale increased from .73 on Tool I to .88. After the revisions, Tool III consisted of 60 items and had an overall alpha of .90.

At each subsequent revision of the LCDSS improvements resulted in either

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the inter-item correlations, the alphas, or both. The Culture subscale showed improvements in both the inter-item correlations and in the alphas at each stage. Alpha for the Culture subscale increased from .53 on Tool I to .81 on Tool III.

Inter-item correlations for the Transactional subscale remained about the same through all three revisions, but changes in the wording of questions increased alpha from .74 on Tool I to .76 on Tool III. The Transformational subscale showed a slight dip in both alpha and in the inter-item correlations. This dip can be attributed, in all likelihood, to wording changes on that subscale.

The Work-role subscales improved from Tool I to Tool III. The number of items on the Administrator subscale was reduced from eight to five. Even with this reduction, the inter-item correlations rose from .18 to .46, and the alphas went up from .58 to .81. The Supervisor subscale contained 8 items on Tool I and 11 items on Tool III. This increase, along with wording changes in the items, had minimal effects on the subscale overall. Inter-item correlations dipped slightly from .26 to .23, and alpha rose from .73 to .76.

The Manager subscale, which consisted of 8 items on Tool I, had 10 items on Tool III. Inter-item correlations remained virtually the same for Tool I and

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Tool III (.27 and .26, respectively), and alpha increased slightly, from .74 to .77.

The Leader subscale went from 8 items on Tool I to 9 items on Tool III and showed a slight increase in inter-item correlations (from .30 to .32). The alpha for the Leader subscale increased from .73 on Tool I to .81 on Tool III.

Tool III contains 60 items and has an overall alpha coefficient of .90 (up from .86). The 60-item tool will be referred to as Tool III in the remainder of this paper.

Discussion

Tool III evolved through various stages of psychometric development. Alphas on the seven subscales of the tool range from .76 (for Transactional and Supervisor) to .84 (for Transformational). The exploratory factor analysis, which was used for instrument development and data reduction, shows that items cluster in explainable patterns. The homogeneity reliability for the entire tool is .90.

Still in its formative stages, the tool can be further refined over time to improve all alphas, particularly in the case of the Transactional, Supervisor, and Manager scales. In its present state, however, with alphas ranging from .76 to .90,

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the LCDSS does an adequate job of measuring the constructs as they have been operationalized.

One caveat and one major limitation must be discussed. The caveat pertains to sample size. The size of the sample used for this study was small in comparison to standards outlined for homogeneity reliability analysis and exploratory factor analysis. Larger samples may have yielded stronger correlations and higher alphas.

The limitation relates to the Culture subscale. Because of the way the tool is designed, a principal must be working in and must be familiar with a particular school cultural setting in order to define culture. The items require the principal to have almost an insider's knowledge about the beliefs of the community. A practicing principal may have a solid basis for describing how a community views the school. A new principal, on the other hand, would not have this advantage.

If a principal's purpose in completing the questionnaire is to identify his or her predominant work-role in an attempt to seek employment in a compatible culture, the tool is inadequate, since the uninitiated principal is in no position to evaluate an unfamiliar environment. The matching of work-role and culture would work better if the culture questions were answered by members of the school

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community, perhaps the teachers, superintendent, or school board members. These constituents shape and define the culture of a school and a school community. The instrument could be used as part of a search process for a principal whose work-role orientations are compatible with what the culture demands. The inability of the culture subscale to stand alone is a major weakness of the LCDSS.

In addition, culture is operationalized on the basis of not only students, teachers, and parents but also on the basis of people who may live in the community but do not have a vested interest in the schools. Based on the current literature, the culture subscale should be more closely related to the notion of "school as community," or "school as political entity" as opposed to the broader notion of school as part of a neighborhood, although the neighborhood concept has intriguing implications for further research.

Previous leadership style tools, such as the MLQ, have been operationalized for and have worked well in business and military settings. As researchers began to use these instruments in school settings, they found that the constructs underlying these instruments did not translate precisely to school situations (Kirby, 1992; Stone, 1992; Silins, 1992). The LCDSS, on the other

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hand, was designed specifically to address problems, issues, and behaviors that arise as a matter of routine in most schools.

The LCDSS contains Transformational and Transactional leadership style subscales with moderately strong alpha coefficients. Psychometric evidence from this study shows the LCDSS capable of isolating leadership characteristics as they exist in schools. Further construct validation should be done on these subscales, perhaps using the MLQ and LBDQ as the basis for comparison.

The work-role subscales on the LCDSS tend to identify behaviors and attitudes held by the principal in relation to his or her major leadership style preference. For example, transactional leaders tend to exhibit work-role preferences related to the characteristics of Managers and Supervisors. Likewise, transformational leaders exhibited characteristics of Administrators and Leaders.

The work-roles do not appear to exist as distinct entities. Further, leader variables appear on all factors in the exploratory factor analysis. This may indicate a ubiquitousness of the "leader" construct or a problem with the operationalization of the leader dimension of the model. Additional study should be conducted on the relation of work-roles to the two leadership style designations.

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Table 1

Summary of Psychometric Indicators - Tool I

Subscale	Alpha	Item mean	Inter-item correlation	Sub-scale mean	No. of items Tool I
Culture	.53	3.32	.16	26.62	8
Transactional	.74	2.96	.26	26.67	9
Transformational	.87	3.83	.40	30.64	8
Administrator	.53	3.81	.18	30.47	8
Supervisor	.73	2.62	.26	20.93	8
Leader	.73	4.12	.30	32.99	8
Manager	.74	3.43	.27	27.42	8

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Table 2

Exploratory Factor Analysis - Tool II Culture and Style Variables

	Factor 1	Factor 2	Factor 3
TF11	.72651	-.19696	.03631
TF12	.71041	-.08834	.02322
TF22	.59765	-.16756	-.07462
TF20	.59199	-.10254	.21689
TF25	.58965	-.14002	.18501
TF24	.54909	-.07683	.21576
TF21	.50876	-.08450	.27444
TF19	.48343	-.04607	.21626
TA10	.40283	-.05181	.27508
CU10	-.10714	.68306	-.05958
CU01	-.13171	.62658	.02306
CU05	-.18034	.61308	-.00906
CU07	-.11301	.60576	-.09899
CU03	-.13474	.58772	.01671

(table continues)

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	Factor 1	Factor 2	Factor 3
CU06	-.08733	.53437	.04181
CU02	-.15559	.49564	-.10713
CU08	-.08702	.44074	-.03247
CU09	.01384	.37977	-.03539
CU04	.01519	.36151	.01546
TA18	.08809	.04752	.62395
TA17	.22574	-.08442	.61687
TA15	.14291	-.07169	.60868
TA16	.11070	-.01541	.54649
TA23	.02296	-.09594	.47582
TA13	.15399	-.07781	.37336
TA09	.13266	.11561	.31361
TA14	-.01390	.25782	.26256

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Table 3

Exploratory Factor Analysis - Tool II Work-role Variables

	Factor 1	Factor 2	Factor 3	Factor 4
LD48	.56218	.00309	.17545	.11639
LD50	.52542	-.03002	.12394	.23012
LD36	.51293	-.03308	.21237	.32043
LD68	.49111	.02381	.12553	.21068
LD51	.45506	-.07900	.08510	.06985
LD49	.43078	-.08659	.09420	.16728
MG44	.42762	.09580	.14465	.18652
LD35	.42465	-.05758	.04866	-.03183
LD55	.42140	-.01544	.07445	.05035
MG42	.40789	.11891	-.04924	.25455
MG65	.39638	.14719	.04459	.06534
AD58	.38225	.16609	.07705	-.05738
MG46	.34924	.18125	-.01779	-.06679

(table continues)

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	Factor 1	Factor 2	Factor 3	Factor 4
MG39	.34351	.26624	-.01485	-.05193
SU38	.02369	.56019	-.15984	.04556
MG57	.05713	.55813	-.09960	.21728
SU33	-.16601	.54175	-.13483	.06300
SU53	-.16359	.52896	.10913	-.18110
SU43	.12512	.51462	-.27512	-.06598
SU66	.07895	.51147	.10869	.03611
MG47	.12145	.47374	-.17752	.13636
SU32	.14477	.46888	-.42326	-.23516
AD62	.08873	.43703	.16610	-.22613
SU28	.28244	.43346	-.24656	-.16774
SU67	-.03628	.43279	.21733	.07852
SU29	-.05248	.39394	-.19929	.04807
LD56	.09246	.29930	.11970	.24517
AD30	.14858	-.08577	.66543	.12093
AD31	.03777	-.06557	.61970	-.00745
LD52	.30929	-.18300	.52654	.04007
AD34	.15507	.01723	.52531	.07673

(table continues)

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	Factor 1	Factor 2	Factor 3	Factor 4
AD45	.40050	.04538	.44271	-.00868
AD26	.19121	.04720	.37078	-.08393
AD27	.32922	-.16212	.34005	-.06150
SU41	.02615	.39053	.08321	-.45814
MG37	.22417	.18435	-.20726	.36650
AD54	.31555	.00779	.22111	.36017
MG40	.33406	-.06478	.08848	.35006
MG64	.31905	.31974	.02313	.33641
AD61	.22262	.11515	.07231	.32888

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Table 4

Means and Standard Deviations for Tool II Culture Subscale (n = 303)

	Mean	Standard deviation	Item-subscale correlation	Alpha if deleted
CU01	4.61	0.80	.58	.78
CU02	4.74	0.72	.46	.79
CU03	4.84	0.68	.55	.78
CU05	4.74	0.74	.48	.79
CU06	5.00	0.80	.49	.79
CU07	5.01	0.72	.57	.78
CU10	4.91	0.68	.63	.77
CU08	4.87	0.76	.43	.80

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Table 5

Means and Standard Deviations for Tool II Transactional Subscale (n = 303)

	Mean	Standard deviation	Item - subscale correlation	Alpha if deleted
TA09	1.64	1.33	.37	.74
TA10	3.57	1.33	.36	.75
TA13	2.72	1.54	.39	.74
TA14	2.33	1.09	.31	.75
TA15	2.51	1.19	.57	.72
TA16	3.29	1.10	.50	.73
TA17	2.56	1.40	.55	.71
TA18	2.25	1.32	.52	.72
TA23	2.55	1.35	.39	.74

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Table 6

Means and Standard Deviations for Tool II Transformational Subscale (n = 303)

	Mean	Standard deviation	Item - subscale correlation	Alpha if deleted
TF11	3.70	1.10	.66	.81
TF12	4.10	0.97	.65	.81
TF19	3.46	1.21	.49	.83
TF20	3.23	1.16	.57	.82
TF21	3.43	1.10	.55	.82
TF22	4.05	0.96	.55	.82
TF24	3.73	1.02	.55	.82
TF25	3.73	0.99	.57	.82

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Table 7

Means and Standard Deviations for Tool II Administrator Subscale (n = 303)

	Mean	Standard deviation	Item - subscale correlation	Alpha if deleted
AD30	4.18	0.90	.69	.74
AD31	3.95	1.00	.61	.76
AD34	3.84	1.03	.57	.78
AD45	4.00	0.94	.51	.79
LD52	4.41	0.71	.62	.77

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Table 8

Means and Standard Deviations Tool II Supervisor Subscale (n = 303)

	Mean	Standard deviation	Item - subscale correlation	Alpha if deleted
SU28	3.21	0.98	.34	.74
SU29	1.76	0.80	.26	.75
SU32	2.66	1.17	.45	.73
SU33	1.95	1.27	.42	.73
SU38	2.01	1.06	.55	.72
SU41	3.10	1.12	.45	.73
SU43	2.39	1.01	.45	.73
SU53	2.36	1.27	.42	.73
SU66	2.83	1.39	.40	.73
SU67	2.18	1.46	.34	.74
AD62	3.18	1.43	.38	.74

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Table 9

Means and Standard Deviations for Tool II Leader Subscale (n = 303)

	Mean	Standard deviation	Item - subscale correlation	Alpha if deleted
LD35	4.30	0.73	.34	.80
LD36	4.62	0.79	.50	.78
LD48	4.28	0.92	.55	.77
LD49	4.43	0.82	.49	.78
LD50	4.40	0.91	.62	.76
LD51	4.64	0.91	.51	.78
LD55	4.84	0.55	.43	.79
LD68	4.31	1.02	.61	.77
AD58	3.84	1.06	.42	.80

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Table 10

Means and Standard Deviations for Tool II Manager Subscale (n = 303)

	Mean	Standard deviation	Item - subscale correlation	Alpha if deleted
MG37	3.06	1.28	.43	.75
MG39	3.45	1.03	.49	.74
MG40	3.98	1.07	.35	.76
MG42	3.49	1.02	.30	.76
MG44	3.86	0.93	.47	.74
MG46	4.36	0.85	.39	.75
MG47	3.10	1.14	.52	.74
MG57	2.74	1.12	.42	.75
MG64	3.10	1.19	.54	.73
MG65	4.05	0.94	.44	.75

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Table 11

Homogeneity Comparisons among Analyses - Tool II

	Scale mean	No. of variables	Item mean	Inter-item correlation	Alpha
57 variables FR01 to MG57 - Tool I					
Total	195.73	57	3.43	.17	.91
Frontier	10.56	4	1.04	.14	.40
Settlement	16.06	4	4.01	.47	.77
Culture	26.62	8	3.33	.16	.53
Transactional	26.67	9	2.96	.26	.74
Transformational	30.64	8	3.83	.45	.86
Administrator	30.47	8	3.81	.18	.58
Supervisor	20.93	8	2.62	.26	.73
Manager	27.41	8	3.43	.27	.74
Leader	32.98	8	4.12	.30	.73

(table continues)

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	Scale mean	No. of variables	Item mean	Inter-item correlation	Alpha
67 variables CU01 to LD51 - Tool II					
Total	207.81	67	3.1	.07	.82
Frontier	--	--	--	--	--
Settlement	--	--	--	--	--
Culture	14.68	10	1.5	.29	.77
Transactional	23.28	9	2.6	.21	.70
Transformational	29.25	8	3.7	.39	.83
Administrator	39.29	10	3.9	.18	.64
Supervisor	24.10	10	2.4	.22	.73
Manager	34.51	10	3.5	.18	.69
Leader	42.69	10	4.3	.24	.73

(table continues)

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	Scale mean	No. of variables	Item mean	Inter-item correlation	Alpha
60 variables - Tool III (deletes CU04, CU09, AD26, AD27, AD54, AD61, LD56)					
Total	214.71	60	3.58	.14	.90
Frontier	--	--	--	--	--
Settlement	--	--	--	--	--
Culture	38.74	8	4.83	.35	.81
Transactional	23.46	9	2.60	.27	.76
Transformational	29.47	8	3.68	.41	.84
Administrator	20.41	5	4.08	.46	.81
Supervisor	27.67	11	2.52	.23	.76
Manager	35.22	10	3.52	.26	.77
Leader	36.70	9	4.41	.32	.81

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